

REMARKS

I. Status of Claims

Claims 1-20 are pending.

Claims 3-5 and 15-17 were allowed.

Claims 1,2, 13 and 14 were rejected.

Claims 6-12, and 18-12 were objected to as being based on a rejected claim.

II. New Corrected Drawings

The examiner required new corrected drawings in the previous office action because of numerous hand notations on the original drawings. Revised drawings comprising Figures 1-4 are included herewith.

III. Claim Rejections Pursuant to 35 USC § 103

The Action rejected claims 1, 2, 13 and 14 under 35 U.S.C. § 103 as being unpatentable over Ushirokawa et al, (US Patent 5,228,058). Claim 1 requires, “a correlator circuit block that detects incorrect convergence of the adaptive equalizer by summing a plurality of consecutive alternate mark inversion symbols.”

Ushirokawa neither discloses nor suggests these features. Ushirokawa teaches an adaptive equalizer, a correlator and a normal equation circuit (Fig. 2, 202, 203 and 204), wherein “the correlators each calculate[] a correlation between the received signal $r_1 \dots$ and the output signal a_1 of the equalizing circuit.” Column 6, lines 37-55. As such, the correlation disclosed in Ushirokawa is between the input signal and the output signal. Ushirokawa does not disclose or suggest a correlator circuit “summing a plurality of consecutive alternate mark inversion [AMI] symbols.” Ushirokawa merely discloses a correlator with the output fed back through an equalizer (Fig. 2). This feedback does not suggest the above recitation from claim 1. Nevertheless, the Action argues that it would have been obvious to one of ordinary skill in the art

to apply AMI signals to the circuit disclosed in Ushirokawa and rejected claim 1 under 35 USC §103. The signals summed in Ushirokawa are different than the plurality of consecutive AMI symbols stated in claim 1 and thus the Ushirokawa circuit would not motivate one of ordinary skill in the art to apply Urishokawa's method to a plurality of AMI signals.

Moreover, AMI signals have a special property wherein "the summation of any set of consecutive AMI symbols is always equal to a symbol in the AMI alphabet." Application, p.4 lines 13-14. Thus, the circuit disclosed in Ushirokawa, which is described as "receiving digital signals over a transmission channel which suffers from intersymbol interference for adaptively equalizing the received signals" (column 1, lines 6-9), is not particularly suited to any specific type of digital signal and not directed toward exploiting the unique properties of an AMI signal. As noted by the applicants, "In some prior art systems, adaptive equalization techniques were not used for AMI signal equalization, due to the wrong solutions introduced by the code memory." Page 2, lines 3-5. The present application further states that "This incorrect convergence is caused by an AMI code property." Page 4, lines 12-13. See also U.S. Patent 6,804,694 Albert et al, on which applicants Peon and Vila were inventors, which states: "most adaptive equalization techniques fail to equalize AMI signals given the source correlation (memory effect) of this transmission code." Column 1, lines 17-20. Thus, there would have been no motivation for one of ordinary skill familiar with the Ushirokawa adaptive equalizer circuit to use that circuit to process an AMI signal.

Applicant respectfully submits that the rejection of claim 1 has been overcome and requests that the rejection of claim 1 be withdrawn, and claim 1 allowed.

Further, claim 2 is separately patentable from claim 1. Claim 2 has been amended to independent form including all of the limitations of claim 1. No new subject matter is added. The Action rejected claim 2, which requires, "the correlator circuit block further comprises means for calculating an estimate of an autocorrelation function of the equalizer output signal." The Action argues that the circuit in Ushirokawa (column 6, lines 38-55) is equivalent to an autocorrelator and rejects claim 2. It is well known in the art, however, that an autocorrelator forms a product of only time-shifted versions of the same signal, whereas the circuit in Ushirokawa, which is not described as an autocorrelator by the inventors, forms a product of an

input signal and delayed copies of that signal and an output signal that has been fed through a normal equation circuit and an adaptive equalization circuit (Fig. 2, 204 and 202). As such, the circuit in Ushirokawa is not an equivalent to the circuit of claim 2.

Because Ushirokawa does not teach or suggest an autocorrelator function and for the reasons stated above regarding claim 1, the limitations of which have been incorporated into amended claim 2, the examiner's rejection of claim 2 has been overcome, and claim 2 be should be allowed.

Claim 13 should be allowable for at least the same reasons as claim 1. Claim 14 is separately patentable from claim 13. Claim 4 has been amended to independent form including all of the limitations of claim 13. No new subject matter is added. Claim 14 should be allowable for at least the same reasons as claim 13 and for the same reasons as claim 2. Applicant respectfully requests that claims 13 and 14 be allowed.

IV. Allowable Subject Matter

The examiner has objected to claims 6-12 and 18-20 as being dependent on rejected base claims, but noted that they would be allowable if rewritten in independent form including all of the limitations of the base claims and any intervening claims.

For the reasons stated above regarding claims 1, 2, 13 and 14, claims 6-12 and 18-20 should be allowable.

With respect to claims 6, 7, 8 and 9, which depend from claims 1 and 2, because the applicant has overcome the rejection of claims 1 and 2, the applicant requests that these claims be allowed in their original form.

With respect to claims 10, 11 and 12, which depend from claims 1 and 9, because the applicant has overcome the rejection of claims 1 and 9, the applicant requests that these claims be allowed in their original form.

With respect to claims 18, 19 and 20, which depend from claims 13 and 14, because the applicant has overcome the rejection of claims 13 and 14, the applicant requests that these claims be allowed in their original form.

VIII. Conclusion

Applicant submits that the examiner's rejections have been overcome by the remarks made herein, and the rejections can no longer be sustained. Applicant respectfully requests reconsideration and withdrawal of the rejections and that a Notice of Allowance be issued.

Should any unresolved issues remain, the examiner is requested to call Applicant's attorney at the telephone number below.

The Commissioner for Patents is hereby authorized to charge any fees or credit any excess payment that may be associated with this communication to Duane Morris LLP deposit account 04-1679.

Respectfully submitted,



Steven E. Koffs
Registration No. 37,163, Attorney for Applicant

DUANE, MORRIS LLP
One Liberty Place
Philadelphia, Pennsylvania 19103-7396
215-979-1250 (Telephone)
215-979-1020 (Fax)